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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/039,471	10/19/2001	Mark T. Martin	100391-02030	1031

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KRAMER LEVIN NAFTALIS & FRANKEL LLP
INTELLECTUAL PROPERTY DEPARTMENT
1177 AVENUE OF THE AMERICAS
NEW YORK, NY 10036

EXAMINER	
MEAH, MOHAMMAD Y	

ART UNIT	PAPER NUMBER
1652	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/039,471	MARTIN, MARK T.	
	Examiner	Art Unit	
	Mohammad Meah	1652	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *31 March 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3,6-20,23,26-29 and 32-45* is/are pending in the application.

4a) Of the above claim(s) *7-9 and 33-45* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,6,10-20,23,26-29 and 32* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAIL ED ACTION

Claims 1-3, 6-9, 10-20, 23, 26-29 and 32-45 are pending. 7-9, 33- 45 remained withdrawn. Claims 1-3, 6, 10-20, 23, 26-29 and 32 will be examined.

Priority

Acknowledgement is made of applicant's claims benefit of provisional application of 60/242,125 10/20/2000.

Claim Rejections

35 U.S.C 112 2nd paragraph

Claim 26 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 26 is indefinite in the recitation of " said catalytic antibody" as " said catalytic antibody" lacks antecedent basis.

35 USC 1st Paragraph written description Rejection

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-3, 6, 10-20, 23, 26-29 and 32 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the

specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claims 1-3,7, 11-12 are directed to methods of modifying any biological molecule by attaching any label using any catalytic antibody via formation of any bond between said target molecule and label. Claim 10 is directed to methods of modifying any TNFalpha, IL-4, IL-6 or VEGFR2 molecule by attaching any label using any catalytic antibody via formation of any bond between said target molecule and label. Claims 6, 8-9,13-16, are directed to methods of modifying any biological target molecule by attaching beta-lactam antibiotic type label molecule catalyze via formation of any bond between said target molecule and label by any catalytic antibody. Claims 17-20, 23, 26-29, 32 are directed to any enzyme or catalytic antibody molecule that modify any biological target molecule or TNFalpha, IL-4, IL-6 or VEGFR2 type target molecule by attaching any label or any beta-lactam antibiotic type target molecule via formation of any bond between said target molecule and label.

The specification fails to describe in any fashion the physical and/or chemical properties of the claimed class of target molecule and their biological function. A biomolecule can be any antibody, protein, enzyme, hormone, DNA, RNA, lectin, glycoprotein, etc, having variety of bond forming functional groups and the specification fails to describe the characteristics of said target molecule and functional groups therein other than capable of any bond formation with target molecule. Similarly, in the case of said label (i.e., the transition state

analog of the bond to be formed), the specification fails to describe the physical and/or chemical properties of the label and functional groups therein other than the capability of reacting with said target molecule to form said bond. Similarly, in the case of the transition state analog of the bond to be formed, the specification fails to describe the physical and/or chemical properties of the transition state analog other than the capability of eliciting said monoclonal antibody. No relationship between the structure of the target and its functional groups (most target biomolecules comprise multiple functional groups of various varieties, amino group, hydroxyl group, etc) and structure of the labels and its functional groups which is used for inducing antibodies for forming a particular bond is described in the specification and the formation of such bond is dependent on overall structure of the target biomolecule and label and nature of functional groups present therein as well as the structure of the transition state analog used to induce the antibody. Production of specific catalytic antibody depends on the structure of the specific transition state analog (Tawfik et al. from IDS). In most cases, even a single hapten molecule of a transition state analog (for forming or cleaving a bond) elicits multiple catalytic antibodies (Janda et al. from IDS). Since most target biomolecules (antibody, protein, enzyme, hormone, DNA, RNA, lectin, glycoprotein, etc) contain multiple functional groups capable of forming a bond with a functional group on the label (amino, hydroxyl, phosphonate group (and moreover formation a bond of this group with a functional group of the label also depend on the overall structure of the biomolecule and the label as a whole), determining suitable transition state

analog is unpredictable for these groups and hence the production of a suitable catalytic antibody is unpredictable also (Janda et al.).

In *University of California v. Eli Lilly & Co.*, 43 USPQ2d 1938, the Court of Appeals for the Federal Circuit has held that "A written description of an invention involving a chemical genus, like a description of a chemical species (in this case, a genus of biomolecule having a genus of functional group capable of forming a bond with a functional group on the label), requires a precise definition, such as by structure, formula or chemical name of the claimed subject matter sufficient to distinguish it from other materials". As indicated in MPEP § 2163, the written description requirement for a claimed genus may be satisfied through sufficient description of a representative number of species by actual reduction to practice, reduction to drawings, or by disclosure of relevant, identifying characteristics, i.e., structure or other physical and/or chemical properties, by functional characteristics coupled with a known or disclosed correlation between function and structure, or by a combination of such identifying characteristics, sufficient to show that Applicant was in possession of the claimed genus. In addition, MPEP § 2163 states that a representative number of species means that the species, which are adequately described, are representative of the entire genus. Thus, when there is substantial variation within the genus, one must describe a sufficient variety of species to reflect the variation within the genus.

There is no structure-function correlation with regard to the members of the genus of target biomolecule and their functional groups capable of forming a bond with a functional group on the label (as most biomolecule comprise

multiple of this groups and formation of bonds via these groups is dependent on overall structure of the target). The specification discloses the structure of a few antigens and suggestion of eliciting catalytic antibodies against them. However neither the applicants nor prior art ever teach forming any bond between a functional group of target biomolecule with a functional group on the label introducing into a host a target and label and then eliciting catalytic antibody. The specification lacks description of identifying characteristics or properties or structure of the target molecule and the any functional group(s) (as most target comprise multiple of this groups and formation of bonds via these groups with functional group of label molecules a CMAB. Therefore, one of skill in the art would not recognize that applicants' were in possession of the claimed invention.

Applicants' are referred to the revised guidelines concerning compliance with the written description requirement of U.S.C. 112, first paragraph, published in the Official Gazette and also available at www.uspto.gov.

35 U.S.C. 112 first paragraph Enablement Rejections

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-3, 6, 10-20, 23, 26-29 and 32 are rejected under 35 U.S.C. 112, first paragraph are rejected under 35 U.S.C. 112, first paragraph, because the specification, does not reasonably provide enablement for any enzyme or catalytic antibody molecule capable of catalyzing formation of any bond between any functional group of any biological target molecule or any TNFalpha, IL-4, IL-6 or VEGFr2 type target molecule and any functional group of any label or any beta-lactam antibiotic type label molecule and methods of modifying any biological molecule by attaching said label using said catalytic antibody. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention.

Factors to be considered in determining whether undue experimentation is required are summarized in *In re Wands* (858 F.2d 731, 8 USPQ 2nd 1400 (Fed. Cir. 1988)) as follows: (1) the quantity of experimentation necessary, (2) the amount of direction or guidance presented, (3) the presence or absence of working examples, (4) the nature of the invention, (5) the state of the prior art, (6) the relative skill of those in the art, (7) the predictability or unpredictability of the art, and (8) the breath of the claim(s).

These claims are so broad to encompass any enzyme or catalytic antibody molecule capable of catalyzing formation of any bond between any functional group of any biological target molecule or any TNFalpha, IL-4, IL-6 or VEGFr2 type target molecule and any functional group of any label or any beta-lactam antibiotic type label molecule and methods of modifying any biological molecule by attaching said label using said catalytic antibody. Most

target biomolecules and label molecules comprise multiple functional groups. Bond formation between different functional group of biological target molecule and functional group of label molecule is dependent on the nature of functional groups as well as overall structure and nature of the biomolecule, (Murray et al.). Therefore an antibody catalyzes formation of one type of bond between one specific functional group of a target molecule and functional group of a label molecule will not catalyze the bond formation between other type functional group of a target molecule and functional group of a label molecule.

The specification discloses the structure of a few label molecules and few target molecule and suggestion of eliciting catalytic antibodies against them. Even each of these target biomolecules comprise multiple of various functional groups (various amino, hydroxyl groups). However the applicants have not isolated a single catalytic antibody. As explained above the structure of the hapten is very crucial in antibody catalysis and production of specific catalytic antibody depends on the structure of the specific transition state analog. Production of CMAB for specific bond formation between functional group of biological target molecule and functional group of label molecule is dependent on the nature of functional groups as well as overall structure of the biomolecule. Specific bond formation between two functional groups of two organic compounds and catalyzing it by a CMAB elicited by known hapten molecule ***in-vitro*** is well known to the skilled artisan; However, finding a suitable transition state analog for the formation of bond between one of the enormous number of functional groups of target biomolecule and functional group of label and

producing CMAB for said reaction, and finding which among enormous variants of said CMAB and said groups as claimed by applicants has desired properties (producing desired CMAB, effecting desired biological function) requires that one of ordinary skill in the art know or be provided with guidance for the selection of which of the enormous numbers of functional groups of target biomolecule and functional group of label are suitable for production of CMABs, knowledge of a suitable transition state analog of said bond, and knowledge of which CMABs are suitable to elicit said function (said bond formation). Without such guidance one of ordinary skill would be reduced to the necessity of producing and testing all of the virtually infinite possibilities. This would clearly constitute **undue** experimentation.

Thus, applicants have not provided sufficient guidance to enable one of ordinary skill in the art to make and use the claimed invention in a manner reasonably correlated with the scope of the claims broadly including any enzyme or catalytic antibody molecule capable of catalyzing formation of any bond between any functional group of any biological target molecule or any TNFalpha, IL-4, IL-6 or VEGFr2 type target molecule and any functional group of any label or any beta-lactam antibiotic type label molecule and methods of modifying any biological molecule by attaching said label using said catalytic antibody. The scope of the claims must bear a reasonable correlation with the scope of enablement (In re Fisher, 166 USPQ 19 24 (CCPA 1970)). Without sufficient guidance, determination of substances having the desired biological

characteristics is unpredictable and the experimentation left to those skilled in the art is unnecessarily, and improperly, extensive and undue.

CLAIM Rejection - 35 U.S.C 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless
>
> e) The invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

Claims 17-20, 23, 26-29, 32 are rejected under 35 U.S.C. 102(b) as being anticipated by Tanaka et al. (Tet lett 1999, pp 8063-8066 from IDS). Tanaka et al. teaches catalytic antibody which help formation of acyl-enzyme bond formation between □-lactamase (target) and □-lactam type compound (label).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mohammad Meah whose telephone number is 571-272-1261. The examiner can normally be reached on 8:30-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ponnathapu Achutamurthy can be reached on 571-272-0928. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Mohammad Younus Meah, PhD
Examiner, Art Unit 1652
Recombinant Enzymes, 3C31 Remsen Bld
400 Dulany Street, Alexandria, VA 22314
Telephone: 517-272-1261

/Rebecca Prouty/
Primary Examiner
Art Unit 1652